

close connection between the extremities of these tubules and the Malpighian bodies, yet he agrees with Bidder, Gerlach, and others, in denying that these vascular tufts lie bare within the cavity of the dilated portion of the tubules. Although he does not recognize the existence of the membranous partition between the tuft and the cavity, described by Bidder, yet he states that the cavity is freely lined, as also is the surface of the vascular tuft covered, by an abundance of epithelium, so that the tuft lies embedded in a mass of epithelial cells (as described by Gerlach).* He mentions that in the kidneys of the animals (lizards) which he examined, ciliary epithelium, in a state of active movement, was present along the whole length of the urinary tubules, with the exception of at their exit from the gland, and just where they dilated into their terminal extremities within the substance of the organ.†—*Ibid.*

6. *Absence of Corpus Callosum.*—M. PAGET has communicated to the Med. Chirurg. Society, the details of a case in which the middle portion of the fornix and the whole of the septum lucidum were absent, and in which, in place of the corpus callosum, there was only a thin fasciculated layer of white nervous matter, 1-4 inch in length, but of which the fibres extended into all those parts of the brain into which those of the healthy corpus callosum can be traced. Behind the imperfect corpus callosum, the optic thalami, the middle commissure (which was very large), the posterior commissure, and the pineal gland lay exposed after removal of the velum. The lateral parts of the fornix and the rest of the brain were quite healthy. The patient was a servant girl who died of pericarditis. She had displayed during life nothing very remarkable in her mental condition beyond a peculiar want of forethought and power of judging of the probable event of things. Her memory was good, and she possessed as much ordinary knowledge as is commonly acquired by persons in her rank of life. She was of good moral character, trustworthy, and fully competent to all the duties of her station, although somewhat heedless; her temper was good, and disposition cheerful. From these facts Mr. Paget is inclined to regard the functions of the corpus callosum as connected with the highest operations of the mind, especially as in the few cases in which it has been found deficient, or altogether absent, the mind has possessed a moderate average power and capacity for knowledge, and all the lower functions of the nervous system have been perfectly discharged.—*Ibid.*

ORGANIC CHEMISTRY.

7. *Presence of Copper and Lead in the Bile.*—Last year BENTOZZI made the discovery that copper is contained, in a tolerably large amount, in brown biliary calculi; he was never able, however, to detect this metal in the bile itself. By the announcement of BENTOZZI's discovery HELLER was induced to pay attention to the subject, and after a careful examination was led to a similar conclusion; namely, that the coloured biliary calculi contain a large amount of copper.‡ The method adopted by Heller for the detection of copper was more simple than the one employed by BENTOZZI. Heller directs several of the darkest calculi to be rubbed together into a rather coarse powder, and then burned in a platinum crucible previous to the addition of nitric acid. The ash of the combustion is to be treated with a little nitric acid to remove any remains of carbon, then dissolved in water acidulated with nitric acid, neutralized, and finally tested for copper by the ordinary reagents.

* Last Report, p. 309.

† The high interest of the above papers must be the excuse for the length at which they have been noticed. They contain much other valuable matter, which it did not appear necessary to notice here, but which will well repay a careful perusal. [Since the above was written, M. Hyrtl, in a strange paper on the "Physiology of the Urinary Secretion," (translated in the Medical Times, April 4, 1846,) denies absolutely the existence of any connection between the Malpighian body or the capsule covering it, and the extremity or any part of the urinary tubule.]

‡ Archiv. für Chemie und Mikroskopie, vol. ii. p. 238.

Heller has since continued his researches on the subject, and has extended them to an examination of the bile itself for copper and other metallic substances.* He repeatedly examined the bile both of children and adults, who died of various diseases, and he states that in the bile of adults he has many times detected copper, but never hitherto in that of children. The mode of examination which he adopts is the same as that pursued in the case of biliary calculi. He observes, that after combustion of the bile, and before he applied the tests for copper, he could always tell if this metal were present, by the fused residue, when cold, assuming a light blue or bluish-green colour; when this change of colour did not take place, no bile was discovered by the employment of tests. To detect the presence of copper he found it necessary to employ the bile not merely of one but of several gall-bladders, and only that which after combustion underwent the change of colour above mentioned. He never detected so much copper in the bile, however, as he found in the dark biliary calculi.

Heller also mentions having examined the urine and blood of a young man, a house-painter by trade, who was severely afflicted with lead colic; he was not able to detect a trace of lead in either of these fluids, but after the patient's death he examined the bile, and found there both lead and copper. He observes that copper and arsenic having been already most clearly found in the liver in cases of poisoning with these substances, it seems probable that those metallic salts which are foreign to the composition of the blood, and useless to the system, are, even when present in small quantities, gradually separated from the blood by the liver, and so removed from the system. This supposition will account for the immunity from the ill effects of lead, so long enjoyed by those persons who make free use of this metal in their trades, the poison which in these cases is gradually taken into the system being as gradually removed by the liver. The same applies also to copper; and, as Heller observes, it seems highly probable that we are from time to time taking in minute quantities of the metal in our food, and that this becomes separated from the blood by the liver, and so is found in the bile. The fact that this metal is not always found present in the bile is in favour of this supposition, [and a proof that copper is not a necessary ingredient in this fluid, as most probably it is not also in any other of the fluids or tissues of the healthy body; the same may also be said of lead.] This fact, that metallic salts which are foreign to the system are deposited in the bile, is of considerable therapeutic importance; worthy of regard also is the circumstance that the yellowish-brown, the brown, and the black gall-stones, always contain copper, and that the amount of this metal is proportionate to the dark colour of the calculi. Those white cholesterine gall-stones, which possess merely an external white crust, and have their centre or nucleus of a darker colour, contain copper only in the latter part, which is tinged brown by the bile-colouring matter: the outer white layer containing not a trace. Almost all the white gall-stones possess this central brown nucleus. Moreover, in the dark-coloured gall-stones copper is always contained, though not in the bile of the same subject; a circumstance which renders it probable that the copper has some influence in the formation of the biliary concretions.

Heller suggests the importance of instituting a series of experiments on animals to consist in administering to them in their food minute quantities of lead, copper, and other metallic salts, with the object of determining whether these salts are separated from the blood by the liver, and if so, which of them are so especially.—*Heller's Archiv.* 5 and 6, 1845.†

8. *Analysis of the Urine in Dropsy after Small-pox.* By Dr. HELLER.—The patient was a young girl, who after the subsidence of a severe attack of variola, became the subject of general anasarca. The urine was of a pale fawn-colour, turbid, had an acrid reaction, and deposited an abundant coarse-grained sediment; possessing therefore most of the general characters of the urine in Bright's disease. A microscopic examination of the sediment detected heaps of urate of ammonia,

* L. c. p. 321, et seq.

† In a more recent number of the *Archiv.* (Heft 1, 1845), Heller's statement of the presence of copper in human bile is confirmed by Dr. Gorup-Besanez, who observes that he has frequently detected it there.

intermixed with which were numerous colourless crystals of uric acid: cylindrical tubules of epithelium from the canals of Bellini, to which also adhered crystals of uric acid; also pus-cells, blood-corpuscles, and pavement epithelium. The urine contained also a quantity of uroanthin. Its acid reaction remained even after it had been kept four days in a warm room, at the end of which time numerous crystals of uric acid were found deposited on the sides of the vessel. Its specific gravity was 1012. On the addition of nitric acid its colour was changed to violet, and a quantity of albumen was thrown down in the form of a violet-coloured precipitate. On chemical analysis 1000 parts of the urine were found to consist of water 961.80, solid constituents 38.20. Of the solid constituents 10.53 parts consisted of urea, 0.55 of uric acid, 6.80 of albumen mixed with colouring matter of the urine, and with a small quantity of hæmatin, 17.76 of extractive matters, and 2.56 of fixed salts. Among the salts there were only traces of the chlorides found. As the patient recovered, the urine gradually resumed its normal characters; the specific gravity rose, whilst urea and the salts, especially the chlorides, gradually increased in quantity; though long after the urine contained a large amount of albumen. The chemical and microscopic characters of the first specimen of urine examined in this case were very similar to those presented by urine in Bright's disease, with the exception of urea being in about its normal proportion,—which, according to M. Becquerel, is 10.366 in 1000 parts of the urine of women.—*Heller's Archiv.*

MATERIA MEDICA AND PHARMACY.

9. *New method of making Iodide of Iron, in a state of Purity.* By M. KOP.—It is known that the proto-iodide of iron, prepared in the usual way, cannot be obtained solid in a state of purity. The limpid and colourless solution first formed, acquires a portion of oxygen from the air, and a part of the iron is thus oxidized, while, at the same time, a portion of biniodide of iron is formed, so that the product consists of a mixture of iodide and biniodide of iron with peroxide of iron. If this mixture be dissolved in water, the solution will be of a yellowish-red colour, more or less deep, according to the quantity of biniodide, or even of free iodine present; the solution will also be turbid on account of the peroxide of iron held in suspension.

The author recommends the following method of preparing pure iodide of iron:—Triturate four parts of iodine with two parts of water in a large dish; then add, at once, one part of iron filings in a state of fine division, and continue the trituration. In a few moments there will be manifested a considerable elevation of temperature, together with the disengagement of the vapour of iodine. Sometimes, especially if the temperature of the atmosphere be low, the heat developed from the mixture is insufficient to cause the disengagement of iodine vapour; but in this case, it is only necessary slightly to heat the mixture, immediately after the addition of the iron filings. The mixture is at first liquid, but it soon becomes solid.

There exists, in the proto-iodide of iron thus prepared, a small quantity of iron, which may be easily separated by a filter, when the salt is used in solution, and the filtered liquor will then be colourless, and free from any mixture of biniodide, or of free iodine.

This preparation may be easily administered in the form of pills, made with any proper excipient.*

The occasional effect of this medicine on the teeth is singular. Righini relates the case of a lady affected with a strumous affection, who was taking with advantage the proto-iodide of iron in the form of pills. After having gradually augmented the dose, she all at once perceived that her teeth, which were previously very white, had become quite blue. Alarmed at this result, she applied to the medical man, who soon assured her that the unexpected effect was purely accidental, arising from the liberation of a little iodine, which was exhaled in the

* Schmid's Jahrbucher and Journ. de Chimie Médicale.